ECBC Environmental Monitoring Laboratory
Building E3330, Room 184
Aberdeen Proving Ground, MD 21010-5423
Phone: 410.436.8428
Fax: 410.436.2969

Analytical Narrative

Client/Project: CMA-PMNSCM / Dover AFB EDS	**Date Received:** 10/03/2012
Extraction Analyst: James Fackett	**Date Extracted:** 10/03/2012
Analyst: James Fackett	**Batch No(s):** DOV12100301
Reviewer: Brandon Dusick	**ECBC Sample No(s):** DOV120005

Sample Summary

One liquid (90% MEA) sample and associated quality control were analyzed as received using GCMS on 10/03/2012 following the procedures specified in IOP MT-60, Revision 0, for the following: HD, 1,4-Thioxane, and 1,4-Dithiane.

The sample was free of HD to the laboratory Limit of Quantitation (LOQ). 1,4-Thioxane was detected at a concentration within the calibration curve. 1,4-Dithiane was detected at a concentration above the calibration curve requiring a dilution to accurately quantitate the results.

Sample & Method Performance

Tuning: All tune criteria were met and the reported samples were analyzed within the twelve-hour tune limit.

Calibration: All initial and continuing calibration criteria were met.

Internal Standard Responses: All internal standard responses met method requirements.

Surrogate Recoveries: All surrogate recoveries met method requirements.

LCS/LCSD(s): All quality control criteria were met for the LCS/LCSD.

Method Blank(s): The method blank was free of the analytes of interest to one-half the laboratory LOQ.

MS/MSD(s): All of the quality control criteria were met for the MS/MSD with 2 exceptions. The MS and MSD recoveries for 1,4-Dithiane were above the QC limits due to a high analyte concentration in the parent sample. This deviation has no adverse affect on the results reported.

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Analytical Results PART 1

MBFORM-41 Revision 12 March 2010

PROJECT: DOVER EDS Operation
Reporting POC: Ray DiBerardo of ECBC ECBC: Ray DiBerardo
Phone/Fax: W: F:

Client Sample ID DAF-HD-121003-DL-01
Sample Date 10/3/2012 **Matrix** MEA
Date Rec'd 10/3/2012 **Remarks**

Lab ID: DOV120005 **Batch #: DOV12100301 Method:** MT-60

Analyte		*Result*		*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane		55000	E	ug/L	500	10/3/2012	10/3/2012	
1,4-Thioxane		1200		ug/L	500			
HD	<	500		ug/L	500			
(Surrogate) BFB		107		%R				

Lab ID: DOV120005 DILUTION **Batch #: DOV12100301 Method:** MT-60

Analyte		*Result*		*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane		55000	D	ug/L	5000	10/3/2012	10/3/2012	
(Surrogate) BFB		121		%R				

Client Sample ID DOV12100301-MB
Sample Date 10/3/2012 **Matrix** MEA
Date Rec'd 10/3/2012 **Remarks**

Lab ID: DOV120008 **Batch #: DOV12100301 Method:** MT-60

Analyte		*Result*	*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane	<	250	ug/L	500	10/3/2012	10/3/2012	
1,4-Thioxane	<	250	ug/L	500			
HD	<	250	ug/L	500			
(Surrogate) BFB		100	%R				

All results reported to two significant figures. LOQ = Limit of Quantitation. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the LOQ. Result is an estimated value. Q = Unresolvable anomaly in QC results. B = Analyte detected in Method Blank.

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Analytical QC Results

PART 2 MBFORM-41 Revision 12 March 2010

PROJECT: DOVER EDS Operation
Reporting POC: Ray DiBerardo of ECBC ECBC: Ray DiBerardo
Phone/Fax: W: F:

Client Sample ID DAF-HD-121003-DL-01
Sample Date 10/3/2012 **Matrix** MEA
Date Rec'd 10/3/2012 **Remarks**

Lab ID: DOV120005 **Batch #: DOV12100301 Method:** MT-60
Matrix Spike

Analyte	*Result*	*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane	157	%R		10/3/2012	10/3/2012	
1,4-Thioxane	87	%R				
HD	98	%R				
(Surrogate) BFB	111	%R				

Lab ID: DOV120005 **Batch #: DOV12100301 Method:** MT-60
Matrix Spike Duplicate

Analyte	*Result*	*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane	181	%R		10/3/2012	10/3/2012	
1,4-Thioxane	89	%R				
HD	102	%R				
(Surrogate) BFB	114	%R				

Client Sample ID DOV12100301-LCS
Sample Date 10/3/2012 **Matrix** MEA
Date Rec'd 10/3/2012 **Remarks**

Lab ID: DOV120006 **Batch #: DOV12100301 Method:** MT-60
Lab Control Spike

Analyte	*Result*	*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane	84	%R		10/3/2012	10/3/2012	
1,4-Thioxane	67	%R				
HD	65	%R				
(Surrogate) BFB	99	%R				

MS/MSD and LCS/LCSD results are in % recovery. LOQ = Limit of Quantitation. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the LOQ. Result is an estimated value. Q = Unresolvable anomaly in QC results.

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Client Sample ID DOV12100301-LCSD
Sample Date 10/3/2012 **Matrix** MEA
Date Rec'd 10/3/2012 **Remarks**

Lab ID: DOV120007 **Batch #: DOV12100301 Method:** MT-60

Lab Control Spike Duplicate

Analyte	*Result*	*Units*	*LOQ*	*Preparation*	*Analysis*	*Remarks*
1,4-Dithiane	82	%R		10/3/2012	10/3/2012	
1,4-Thioxane	66	%R				
HD	63	%R				
(Surrogate) BFB	96	%R				

MS/MSD and LCS/LCSD results are in % recovery. LOQ = Limit of Quantitation. D = Sample was diluted. E = Estimated value; result above upper calibration level. J = Detected above the method detection limit but below the LOQ. Result is an estimated value. Q = Unresolvable anomaly in QC results.

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EQ - The Environmental Quality Company
Waste Characterization Report

☐ *I authorize EQ - The Environmental Quality Company to choose the appropriate method of waste management, from the technologies offered, at the EQ facilities identified below.*

☐	**Michigan Disposal Waste Treatment Plant** (Stabilization and Treatment)	49350 North I-94 Service Drive, Belleville, Michigan 48111 Phone: 1-800-592-5489 Fax: 1-800-592-5329	EPA ID #MID000724831
☐	**Wayne Disposal, Inc.** (Hazardous & PCB Waste Landfill)	49350 North I-94 Service Drive, Belleville, Michigan 48111 Phone: 1-800-592-5489 Fax: 1-800-592-5329	EPA ID #MID048090633
☑	**EQ Detroit, Inc.** (Stabilization, Wastewater Treatment)	1923 Frederick, Detroit, MI 48211 Phone: 1-800-592-5489 Fax: 1-800-592-5329	EPA ID #MID980991566
☐	**EQ Ohio (Envirite of Ohio)** (Stabilization and Treatment)	2050 Central Avenue, SE, Canton, OH 44707 Phone: 330-456-6238 Fax: 330-456-2801	EPA ID #OHD980568992
☐	**EQ Pennsylvania (Envirite of Pennsylvania)** (Stabilization and Treatment)	730 Vogelsong Road, York, PA 17404 Phone: 717-846-1900 Fax: 717-854-6757	EPA ID #PAD010154045
☐	**EQ Oklahoma, Inc.** (Stabilization, Wastewater Treatment)	2700 South 25th West Avenue, Tulsa, OK 74107-3435 Phone: 918-582-9595 Fax: 918-560-5252	EPA ID #OKD000402396
☐	**EQ Resource Recovery, Inc.** (Solvent Recycling, Fuel Blending, WW Treatment)	36345 Van Born Road, Romulus, Michigan 48174 Phone: 734-727-5500 Fax: 734-326-4033	EPA ID #MID060975844
☐	**EQ Florida, Inc.** (Drum Consolidation, Labpack Decommissioning)	7202 East Eighth Ave., Tampa, FL 33619 Phone: 1-800-624-5302 Fax: 1-813-628-0842	EPA ID #FLD981932494
☐	**EQ Detroit Transfer and Processing** (Drum Transfer/Universal Waste Handling)	2000 Ferry Street, Detroit, MI 48211 Phone: 1-800-592-5489 Fax: 1-800-592-5329	EPA ID #MIK939928313
☐	**EQIS Indianapolis Transfer and Processing** (Drum Transfer/Non-Hazardous Waste Processing)	2650 N. Shadeland Avenue, Indianapolis, IN 46219 Phone: 1-800-592-5489 Fax: 1-800-592-5329	EPA ID #INR000125641
☐	**EQ Atlanta Transfer and Processing** (Drum Transfer/Non-Hazardous Waste Processing)	5600 Fulton Industrial Blvd., Atlanta, Georgia 30336 Phone: 404-494-3520 Fax: 404-494-3560	EPA ID #GAR000039776
☐	**EQ Augusta, Inc.** (Wastewater Treatment)	3920 Goshen Industrial Blvd., Augusta, GA 30906 Phone: 706-771-9100 Fax: 706-771-9124	EPA ID #GAR000011817

Please note, this profile should not be used for wastes destined to EQ Illinois (Envirite of Illinois). For more information, please contact our National Service Center at (800)592-5489.

Waste Common Name: EDs Neutralent Waste

Section 1 - Generator & Customer Info

SIC/NAICS*:

Generator EPA ID: DE8-570-024-010

Generator: Dover Air Force Base
Address: 600 Chevron
City: Dover
State: DE Zip: 19902
County:

Mailing Address
Address: 600 Chevron
City: Dover
State: DE Zip: 19902

Generator Contact
Name: Deral Freysinger
Title: Environmental
Phone: (302) 677-6845
Fax: ( ) -

*For a list of NAICS codes, please refer to Section 9 of the EQ Resource Guide.

EQ Customer No.: 1471

Invoicing Company
Company: SHAW ENVIRONMENTAL & INFRASTRUCTURE INC
Address: 16406 U.S. ROUTE 224 EAST P O BOX 551
City: FINDLAY
State: OH Zip: 45839-0551
Country:

Invoicing Contact
Name: Betsy Westergren
Phone: (617) 589-1770
Fax: ( ) -

Technical Contact
Name: Greg Norden
Phone: (419) 425-6067
Fax: (419) 425-6085
Mobile: ( ) - Pager: ( ) -
E-mail: greg.norden@shawgrp.com

Section 2 - Shipping & Packaging Info

2.1) Shipping Volume & Unit: 5 to 10 Drums Frequency: One Time Only

2.2) DOT Shipping Name: Waste Corrosive Liquid, bsaic, organic, n.o.s. (monoethanolamine)

2.3) Is this waste surcharge exempt? ○ Yes ● No (If you answered "Yes" to question 2.3, select the Surcharge Exemption reason.)

2.4) Packaging (check all that apply)

- ☐ Bulk Solid (yd ^{3} < 2000 lbs/yd ^{3})
- ☐ Totes, Size
- ☐ Other (palletized, 5 gal. Pail, etc.)
- ☐ Bulk Solid (Ton > 2000 lbs./yd ^{3})
- ☐ Cubic Yard Boxes/Bags
- ☐ Bulk Liquids (Gallon)
- ☑ Drums, Size 55-gal

Quoted bulk disposal charges for solid materials will be billed by the cubic yard, if the waste density is less than 2,000lbs./cubic yard. If waste density is greater than 2,000 lbs./cubic yard, then bulk disposal charges will be billed by the ton, regardless of the approved container.

Section 3 - Physical Characteristics

3.1) Color: BLACK/BROWN 3.2) Odor: Slight

3.3) Does this waste contain any "Potentially Odorous Constituents" as defined in the EQ Resource Guide? (Section 3) ○ Yes ● No

3.4) Physical State at 70 °F: ☐ Solid ☐ Dust/Powder ☑ Liquid ☐ Sludge

3.5) What is the pH of this waste? ☐ ≤ 2 ☐ 2.1-4.9 ☐ 5-10 ☐ 10.1-12.4 ☑ ≥ 12.5

3.6) What is the flash point of this waste? ○ <90 °F ○ 90-139 °F ○ 140-199 °F ● ≥ 200 °F

3.7) Does this waste contain? (check all that apply)

☐ None	☑ Free Liquids	☐ Oily Residue	☐ Metal Fines			
☐ Biodegradable Sorbants	☐ Amines	☐ Ammonia	☐ Water Reactive	☐ Biohazard	☐ Aluminum	
☐ Shock Sensitive Waste	☐ Reactive Waste	☐ Radioactive Waste	☐ Explosives	☐ Pyrophoric Waste	☐ Isocyanates	
☐ Asbestos - non-friable	☐ Asbestos - friable	☐ Dioxins	☐ Furans			

Section 4 - Composition / Generating Process

4.1) Describe the physical composition of the waste (i.e., soil, water, PPE, debris, key chemical compounds, etc.)

monoethanolamine from 20. to 40. %

Water from 60. to 80. %

4.2) Provide a detailed description of the process generating this waste. (attach flow diagram if available).

Detonating military rounds in an enclosed chamber and dosing with MEA reagent to deactivate all residuals.

Section 5 - Is This Hazardous Waste?

Please refer to Section 5 of the EQ Resource Guide for a list of waste codes.

As determined by 40 CFR, Part 261 and Michigan Act 451 Rules:			Please list applicable waste code(s):
5.1) Is this an EPA RCRA listed hazardous waste (F, K, P or U)? Comments:	○ Yes	● No	
5.2) Is this an EPA RCRA characteristic hazardous waste (D001-D043)? Comments:	● Yes	○ No	D002 D008 D018 D043
5.3) Do any State Hazardous Waste Codes apply? Comments:	○ Yes	● No	
5.4) Is this waste intended for wastewater treatment?	○ Yes*	● No	

If you answered "No" to questions 5.1, 5.2, and 5.3, please skip to Section 7.
****If you answered "Yes" to question 5.4, please complete the WCR Addendum.***

Section 6 - Hazardous Wastes

6.1) Does this waste exceed Land Disposal Restriction Levels? ● Yes ○ No

6.1a) If this waste stream is greater than 50% soil, does it meet the alternative soil treatment standards of 40 CFR 268.49? ○ Yes ● No

6.1b) Does this waste contain greater than 50% debris, by volume? (Debris is greater than 2.5 inches in size.) ○ Yes ● No

6.2) Is the waste an oxidizer (D001)? ○ Yes ● No

6.3) Does this waste contain reactive cyanide ≥ 250 ppm (D003)? ○ Yes ● No

6.4) Does this waste contain reactive sulfide ≥ 500 ppm (D003)? ○ Yes ● No

6.5) Please indicate which constituent concentrations are below or above the regulatory level. Please indicate the basis used in the determination. Either 'Below' or 'Above' **MUST** be checked for each constituent.

Based On: ○ **Generator Knowledge** ● **Analysis*** ○ **MSDS***

***Please forward a copy. Analysis or MSDS are required for EQ Florida Non-hazardous wastes.**

Code	Regulatory Level TCLP (mg/l)				Concentration (if above)
D004	Arsenic	5	● Below	○ Above	
D005	Barium	100	● Below	○ Above	
D006	Cadmium	1	● Below	○ Above	
D007	Chromium	5	● Below	○ Above	
D008	Lead	5	○ Below	● Above	5.7
D009	Mercury	0.2	● Below	○ Above	
D010	Selenium	1	● Below	○ Above	
D011	Silver	5	● Below	○ Above	
D012	Endrin	0.02	● Below	○ Above	
D013	Lindane	0.4	● Below	○ Above	
D014	Methoxychlor	10	● Below	○ Above	
D015	Toxaphene	0.5	● Below	○ Above	
D016	2,4-D	10	● Below	○ Above	
D017	2,4,5-TP (Silvex)	1	● Below	○ Above	
D018	Benzene	0.5	○ Below	● Above	3.6
D019	Carbon Tetrachloride	0.5	● Below	○ Above	
D020	Chlordane	0.03	● Below	○ Above	
D021	Chlorobenzene	100	● Below	○ Above	
D022	Chloroform	6.0	● Below	○ Above	
D023	o-Cresol	200	● Below	○ Above	
D024	m-Cresol	200	● Below	○ Above	
D025	p-Cresol	200	● Below	○ Above	
D026	Cresols	200	● Below	○ Above	
D027	1,4-Dichlorobenzene	7.5	● Below	○ Above	
D028	1,2-Dicholoroethane	0.5	● Below	○ Above	
D029	1,1-Dichloroethylene	0.7	● Below	○ Above	
D030	2,4-Dinitrotoluene	0.13	● Below	○ Above	
D031	Heptachlor	0.008	● Below	○ Above	
D032	Hexachlorobenzene	0.13	● Below	○ Above	
D033	Hexachlorobutadiene	0.5	● Below	○ Above	
D034	Hexachloroethane	3.0	● Below	○ Above	
D035	Methyl Ethyl Ketone	200	● Below	○ Above	
D036	Nitrobenzene	2	● Below	○ Above	
D037	Pentachlorophenol	100	● Below	○ Above	
D038	Pyridine	5	● Below	○ Above	
D039	Tetrachloroethylene	0.7	● Below	○ Above	
D040	Trichloroethylene	0.5	● Below	○ Above	
D041	2,4,5-Trichlorophenol	400	● Below	○ Above	
D042	2,4,6-Trichlorophenol	2	● Below	○ Above	
D043	Vinyl Chloride	0.2	○ Below	● Above	12

6.6) If this is a characteristic hazardous waste, does it contain underlying hazardous constituents? ● Yes ○ No

If you answered 'Yes', please list the constituents in Section 11.

Section 7 - Non-Hazardous Wastes

For a complete list of non-hazardous waste codes, please refer to Section 7 of the EQ Resource Guide.

Applicable waste code(s):

7.1) Is this a Michigan non-hazardous liquid industrial waste? ○ Yes ● No

Comments:

7.2) Is this a Universal waste? ○ Yes ● No

7.3) Is this a Recyclable Commodity? (e.g.: computer monitors, free mercury, etc.) ○ Yes ● No

7.4) Is this waste a recoverable petroleum product? ○ Yes ● No

7.5) Is this waste used oil as defined by 40 CFR Part 279? ○ Yes ● No

Section 8 - TSCA Information

8.1) What is the concentration of PCBs in the waste? ● None ○ 0-5 ppm ○ 6-49 ppm ○ 50-499 ppm ○ 500+ ppm

8.2) Does the waste contain PCB contamination from a source with a concentration ≥ 50 ppm? ○ Yes ● No

If you answered 'None' to 8.1 and 'No' to 8.2, please skip to Section 9.

8.3) Has this waste been processed into a non-liquid form? ○ Yes ○ No

If yes, what was the concentration of PCBs prior to processing? (ppm) ○ N/A ○ 0-499 ○ 500+

8.4) Is the non-liquid PCB waste in the form of soil, rags, debris, or other contaminated media? ○ Yes ○ No

8.5) Are you a PCB capacitor manufacturer or a PCB equipment manufacturer? ○ Yes ○ No

8.6) Has the PCB Article (e.g., transformer, hydraulic machine, PCB-contaminated electrical equipment) been drained/flushed of all PCBs and decontaminated in accordance with 40 CFR 761.60(b)? ○ N/A ○ Yes ○ No

Section 9 - Clean Air Act Information

9.1) Is this waste subject to regulation under 40 CFR, Part 63, Subpart DD or 40 CFR, Part 264, Subpart CC (RCRA)? ○ Yes ● No
(Does the waste contain >500 ppm Volatile Organic Hazardous Air Pollutants - VOHAP's or Volatile Organic Compounds - VOC's?)
For a complete list of VOHAPs, please see Section 11 of the EQ Resource Guide.

9.2) Is this site, or waste, subject to any other MACT or NESHAP? ○ Yes ● No

If yes, please specify:

9.3) Does this waste stream contain Benzene? ● Yes ○ No

If you answered "No" to question 9.2, please skip to section 10.

9.4) Does the waste stream come from a facility with one of the SIC/NAICS codes listed under the Benzene NESHAP identified in 40 CFR 61, Subpart FF? ○ Yes ● No

9.5) Is the generating source of this waste stream a facility with Total Annual Benzene (TAB) ≥ 10 Mg/year? ○ Yes ● No
For assistance in calculating the TAB, please see the TAB Worksheet in Section 9 of the EQ Resource Guide.

If you answered "No" to question 9.3 and 9.4, please skip to Section 10.

9.6) Does the waste contain > 10% water? ● Yes ○ No

9.7) What is the TAB quantity for your facility? 3.6 Mg/year

9.8) Does the waste contain >1.0 mg/kg total Benzene? ● Yes ○ No

9.9) What is the total Benzene concentration in your waste? (concentration) 3.6 (unit) mg/L

(Supporting analysis must be attached. Do not use TCLP analytical results. Acceptable laboratory methods include 8020, 8240, 8260, 602 and 624.)

*For a list of NAICS codes, please refer to section 9 of the EQ Resource Guide.

Section 10 - Fuel Blending Information

10.1) Is this waste intended for fuel blending? ○ Yes* ● No

If you answered 'Yes' to question 10.1, please enter the following:

Heat value (BTU/lb.) _____
Chlorine (%) _____
Water (%) _____
Solids (%) _____

10.2) Is this waste intended for reclamation? ○ Yes ● No (5-Gallon Sample required for all reclaim waste streams)

Section 11 - Constituent Information

Please identify your waste constituents from these four categories: **Underlying Hazardous Constituents (UHC's), Volatile Organic Hazardous Air Pollutants (VOHAP's), Volatile Organic Compounds (VOC's) and Toxic Release Inventory Constituents (TRI)**

Constituent	Concentration	UHC?
Antimony	1.3 ppm	● Yes ○ No
Thallium	1.6 ppm	● Yes ○ No
Zinc**	23. ppm	● Yes ○ No

Please see Section 11 of the EQ Resource Guide for a list of UHC's, VOHAP's and VOC's. For a complete list of TRI constituents, please refer to 40 CFR 372.65.